REMARKS/ARGUMENTS

Claims 2, 12, 13, 16, 26, 27, and 30 are amended herein. Claims 2, 4-6, 8, 12-14, 16, 18-20, 22, 26-28, and 30-36 are currently pending.

Claims 2, 4-6, 8, 12-14, 16, 18-20, 22, 26-28, and 30-36 stand rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 6,879,594 (Lee et al.) in view of U.S. Patent No. 6,331,983 (Haggerty et al.).

Claims 2, 16, and 30 are directed to a method, computer-readable storage medium, and apparatus for operating a node in a layer 2 network to handle multicast traffic.

Lee et al. disclose a system for loop avoidance in multi-protocol label switching. The system operates at a label switching router on a label switched path (see, for example, Fig. 1). In the Background of the Invention, Lee et al. refer to a standard spanning tree procedure defined for network bridging devices and note that a plurality of switches interconnected by trunks may be arranged to form a spanning tree.

Lee et al. do not show or suggest establishing state information for a multicast distribution group based on a join message, if such state information has not already been established, or adding a port to a port list associated with state information, the port list being used to select ports for forwarding received multicast traffic of the multicast distribution group. Lee et al. describe binding a particular label to a particular forwarding equivalence class. If a receiver receives a label splice message and it already has a pending splice, there is a possibility of a loop forming and action is taken so that the receiver does not receive an acknowledgement. There is no teaching in Lee et al. of establishing state information for a multicast distribution group based on a join message or adding a port to a port list associated with state information.

In rejecting the claims, the Examiner first refers to conventional spanning tree described in the Background of the Invention. The Examiner then switches to the invention of Lee et al. and cites col. 11, lines 38-44. The steps referred to at col. 11 are clearly performed at a label switching router and not at a switch within a layer 2 network as specified in the claims. Similarly, the label mapping of Lee et al. referred to by the Examiner is also performed at routers.

The state information of applicants' claimed invention is used so that a switch knows which port to use to forward towards an attraction point and is based on the topology of the spanning tree. Multicast packets are forwarded based on the state built up by the join messages. Relatively few resources are required to maintain state on the switches. A large number of sources may be readily accommodated because traffic can flow upward from the sources towards the attraction point without prior state creation.

Furthermore, Lee et al. do not disclose forwarding a join message towards an attraction point of a layer 2 network via a spanning tree defined within the layer 2 network. In rejecting the claims, the Examiner refers to Fig. 6 of Lee et al. which illustrates a loop avoidance mechanism using messages transmitted between routers. The label splice message is sent towards a root, which is a label switching router in the MPLS tree. The claims have been amended to clarify that the attraction point is a layer 2 switch. The claimed invention allows for operation without the presence of layer 3 routers and thus avoids the complexity of running layer 3 multicast routing protocols, such as PIM, as required by Lee et al.

As noted by the Examiner, Lee et al. do not teach receiving multicast traffic addressed to a multicast distribution group or forwarding the multicast traffic via a multicast distribution tree formed based on spanning tree.

Haggerty et al. describe multicast switching. As noted in the Abstract, the invention provides for controlled multicast traffic between router based networks and switch based networks. The switches implement layer 3 switching and do not exchange multicast routing protocol messages (col. 14, lines 6-27). Conventional systems such as

Haggerty et al. require the presence of layer 3 routers in the network in that join messages (e.g., IGMP joins) are forwarded only towards the routers in the network. The claimed invention uses an attraction point that is a layer 2 switch, thus allowing the system to operate without the presence of any layer 3 routers.

Accordingly, claims 2, 16, and 30 are submitted as patentable over Lee et al. and Haggerty et al.

Claims 4-6, 8, and 31-33, depending from claim 2, and claims 18-20 and 22, depending from claim 16, are submitted as patentable for at least the same reasons as their base independent claims.

Claims 5 and 19 are further submitted as patentable over the cited references which do not show or suggest flooding a join message via a spanning tree. In rejecting the claims, the Examiner refers to col. 15, lines 20-22 of Haggerty et al. This section of the patent describes tree formation and has nothing to do with sending join messages. Haggerty et al. simply note that for switches that do not have LSP, a backup flood style mechanism can be used in tree formation.

Claims 6 and 20 are further submitted as patentable over the cited references which do not show or suggest forwarding a join message via one or more ports which an attraction point advertisement message was previously received. As discussed further below, the cited references do not teach attraction point advertisement messages.

The Examiner has failed to point to any teaching of flooding an advertisement message establishing a node as an attraction point for a multicast distribution group. In rejecting claims 12, 13, 26, and 27, the Examiner simply points to the rejection of claim 2, however, this limitation was not included in claim 2. Conventional multicast distribution is sent to a specified receiver or forwarder, thus, there is no need to advertise an attraction point for multicast traffic addressed to a multicast distribution group.

Applicants' invention, as set forth in the claims, is particularly advantageous in that the advertisement messages efficiently build up a multicast distribution tree. Forwarding of multicast data traffic is optimal since a data packet is not sent via a branch which does not have any interested routers.

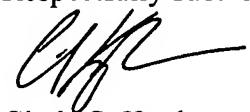
Accordingly, claims 12, 13, 26, and 27, and the claims depending therefrom, are submitted as patentable over the cited references.

Claims 13 and 27 are further submitted as patentable over the cited references which do not show or suggest an attraction point that is a first hop switch connected to a source node.

With regard to new claims 31-36 added in the previous amendment, the Examiner has failed to point to any teaching in any reference. The Examiner states that "Claim 31-36 list all the same elements of claim 2, 4-6, 8, but in method rather than method form" and provides no reasons for rejection of these claims. Claims 31-36 recite new limitations different from the claims referred to by the Examiner.

For the foregoing reasons, Applicants believe that all of the pending claims are in condition for allowance and should be passed to issue. If the Examiner feels that a telephone conference would in any way expedite prosecution of the application, please do not hesitate to call the undersigned at (408) 399-5608.

Respectfully submitted,



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